State of California—Health and Human Services Agency
Department of Health Services

California Department of Health Services

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January 26, 2006

TO: Local Primacy Agencies

FROM: Rufus B. Howell, Acting Chief ***(Original signed by Rufus B. Howell)***
CA Department of Health Services
Division of Drinking Water and
Environmental Management

SUBJECT: BLUE-GREEN ALGAE BLOOMS IN SURFACE WATER SUPPLIES

Recent local, state, national and international activities demonstrate an increasing interest in health concerns related to blue-green algae (cyanobacteria) and potentially harmful algal blooms that may occur in surface water sources such as rivers, streams and reservoirs. The purpose of this letter to inform you of these activities because you may have public water systems that use a surface water source.

Concern about blue-green algal blooms is generally directed to recreational users of freshwater bodies. For example, a 2005 blue-green algae bloom occurred over several months on the Klamath River, prompting health advisories from Siskiyou County and the State Water Resources Control Board.

However, consideration of the potential effects of these blooms on surface drinking water sources is also appropriate. In the near future, we will be sending a letter to all public water systems that use surface water sources to inform about concerns associated with blue-green algae blooms.

HEALTH CONCERNS RELATED TO BLUE-GREEN ALGAE EXPOSURES

When some blue-green algae blooms occur in water bodies, exposure to algae and their toxins can pose risks to humans, pets, livestock and wildlife. Exposure may occur by ingestion, by dermal contact, and by aspiration or inhalation.

Exposure to blue-green algae blooms at elevated levels can cause rashes, skin and eye irritation, allergic reactions, gastrointestinal upset, and other effects. At very high levels, exposure can result in serious illness or death. Depending on the particular cyanobacterium, and the amount to which one is exposed, blue-green algae have the potential to cause a variety of adverse health effects, including liver toxicity (*e.g.*

Microcystis aeruginosa) and neurotoxicity (*e.g., Anabaena circinalis*). Microcystin toxins may also promote tumor growth.

Destruction of cells may release the toxins into surrounding waters, so care must be taken in dealing with blue-green algae blooms.

These effects are not just theoretical, particularly for animals. Several dog deaths have been reported following the dogs' exposure to blue-green algae in Humboldt County water bodies, and there have been worldwide reports of animal poisonings and adverse human health effects.

BLUE GREEN ALGAE IN DRINKING WATER SUPPLIES

We recognize that water systems generally go to great lengths to keep algae from growing in their surface water supplies, primarily to avoid taste and odor problems that would concern their customers. Good management practices help reduce the likelihood of blue-green algal blooms.

When blue-green algae blooms occur, water systems may need to utilize a strategy to deal with or treat the blooms that does not merely kill the algae by rupturing (or lysing) the blue-green algal cells. Rupturing the cells can release their toxins, and such treatment may not be entirely effective in removing the toxins.

Small water systems, especially, may need your assistance in dealing with a bloom, and you may find it helpful to request the assistance of your Department of Health Services (DHS) District Office in such a situation.

There are currently no drinking water standards specifically for blue-green algae, although they are in a very early “pre-regulatory” status: Blue green algae (cyanobacteria), other freshwater algae, and their toxins are on the federal Drinking Water Contaminant Candidate List (CCL). The US Environmental Protection Agency (EPA) uses the CCL to prioritize research and data collection efforts to help determine whether a specific contaminant ought to be regulated. Cyanobacteria are also among EPA's unregulated contaminant monitoring rule.

The World Health Organization’s guideline for the toxin microcystin LR in drinking water is 1 microgram per liter (µg/L).

REQUEST FOR INFORMATION

To assist DHS in developing a better understanding of the extent of blue-green algae blooms in surface water supplies, we are requesting that water systems inform the DHS District Office or the Local Primacy Agency (LPA) if they have experienced any significant historical algal (blue-green algae and green algae) blooms, and if so, to provide information about those blooms, including when the bloom occurred, any speciation of the algae type that might have been performed, and any action that was taken in response to the bloom.

Also, we are requesting that the DHS District Office or the LPA be informed about algal blooms that may occur in the future. The DHS District Office/LPA can assist the water system in developing a strategy to deal with the bloom, particularly for those systems with limited experience in dealing with them.

Finally, we are requesting that water systems inform the DHS District Office or the LPA if they become aware of animal deaths in the presence of actual or suspected algal blooms. Deaths of some livestock and pet animals have been reported to be associated with blue-green algae blooms, and they may serve as indicators of presence of blue-green algae toxins.

AVAILABLE INFORMATION

In response to the growing interest about blue-green algal blooms, the Division of Drinking Water and Environmental Management website (http://www.dhs.ca.gov/ps/ddwem/bluegreenalgae/index.htm) provides information and links to other sites that will be helpful to the public and to local, regional, and state public health and environmental health officials. There you will find links to the federal Centers for Disease Control and Prevention, the World Health Organization, and other materials. Information about blue-green algal blooms and recreational water is also available.

Please note that we plan to provide you with an update on the state's activities with regard to blue-green algae blooms at the joint DHS and LPA meeting in April.